

We should always think of chronic cicatrizing enteritis in cases of partial obstruction, remembering also at operation that the lesions may be multiple throughout the small gut. Since the origin of this lesion is not at all understood, specimens should be studied very completely from the bacteriological standpoint.

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REA SMITH, M. D. (1930 Wilshire Medical Building, Los Angeles).—Doctor Bell has presented a very clear picture of an interesting and almost unknown surgical disease. His paper, therefore, will be of great interest to all abdominal surgeons who have met this condition and have had many kinds of diagnoses made for them in the laboratory.

I am sure that regional cicatrizing inflammation occurs in the colon as well as the small bowel. I look back on two cases occurring near the splenic flexure, treated surgically as malignant, both of which were reported chronic inflammation by the pathologists.

I have a slide of one recent case in which we made a diagnosis of localized tuberculosis of the cecum. Upon opening the abdomen the cecum, the appendix and terminal ileum were all found to be involved in the inflammatory process, and during the exploration a large abscess was opened in the mesentery of the ileum. This was drained, but no resection was done in the presence of pus.

A fistula of small bowel origin developed after some days of drainage of the abscess, which refused to close; and after several weeks we operated the second time, still believing that the process was tuberculous.

The involved ileum and right colon were removed, reversing the ordinary procedure by implanting the ileum into the transverse colon before the field was soiled. We then removed the bowel from the hepatic flexure and had an uncomplicated convalescence. The laboratory pronounced the specimen to be a chronic inflammatory process with ulceration of the mucosa, not tuberculosis.

I am sure that resection for this condition should be wide—well into the good bowel on both sides; or the process may continue in the wall concerned in the anastomosis with disastrous results.

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EMILE E. HOLMAN, M. D. (Stanford University Medical School, San Francisco).—The exact sequence of events in this interesting intestinal lesion is still obscure. An outstanding feature of the pathological changes is the involvement of the lymphatics as shown by edema of the mesentery, and marked hyperplasia of the lymph nodes. Is this an expression of a chronic infection originating in the bowel, or is it possibly the primary lesion, with subsequent fibrosis and secondary constriction of the intestinal canal?

Our attention was directed to this possibility in the following case:

A boy, six years of age, was admitted with a story of vomiting and abdominal pain for twenty-four hours. A palpable mass, exquisitely tender, in the right lower quadrant led to a diagnosis of an appendix abscess.

At operation a large, firm mass was found involving the terminal ileum, the cecum, and the base of the appendix. The appendix itself was very large, its walls edematous and congested. The ileum was thickened, hypertrophied and dilated proximal to the mass indicating the chronic nature of the lesion.

The presence of numerous large but soft glands in the mesentery of the terminal ileum led to a probable diagnosis of sarcoma; but a cross section of one of these glands revealed no evidence of neoplasm.

The terminal ileum and the first portion of the cecum, together with the appendix, were resected, and continuity reestablished by an end-to-end anastomosis, according to the Parker-Kerr technique. The child left the hospital on the fourteenth day perfectly healed.

The pathological examination revealed no ulceration of the mucosa of the ileum or appendix, but a marked edema of their walls, and many lymphoid nodules im-

bedded in the mucosa. There was considerable dense fibrous tissue present, infiltrated with lymphocytes, plasma cells, a few polymorphonuclears and numerous eosinophils. The mucosa of the cecum was normal in appearance, in comparison with that of the ileum which was studded with lymphoid nodules.

The fibrosis was obviously greatest in the periceal, peri-appendicular, and peri-ileal tissues, but did not infiltrate the walls; nor was there any ulceration present either macroscopically or microscopically.

This occurrence in so young a patient has hitherto not been recorded.

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DOCTOR BELL (Closing).—It is, perhaps, noteworthy that each of the discussers of this paper has seen one or more patients with conditions similar to those observed in cases of chronic cicatrizing enteritis, thereby emphasizing the fact that this condition is not so rare as has been supposed. It simply has not been recognized as an entity.

I should like to stress Doctor Breyer's comment that chronic cicatrizing enteritis should be borne in mind in cases of partial intestinal obstruction, and an effort should be made to determine the etiology.

## INDUCTION OF LABOR\*

USING QUININ, CASTOR OIL, RUPTURE OF MEMBRANES, AND NASAL PITUITRIN

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DISCUSSION by J. Morris Slemmons, M.D., Los Angeles; Clarence W. Page, M.D., Berkeley; Daniel G. Morton, M.D., San Francisco.

THERE are no methods of induction of labor which do not have their contraindications, dangers or limitations. However, since the publication of the comprehensive reports of Schultze,<sup>1</sup> Guttmacher and Douglas,<sup>2</sup> Slemmons,<sup>3</sup> Morton<sup>4</sup> and others, many of the fears of dry labor have been dispelled; and from their work there has evolved in selected cases a comparatively safe and reasonably certain means of induction of labor, namely, by the use of quinin and castor oil, in conjunction with the rupture of the membranes and the application of nasal pituitrin.

### ROUTINE OF INDUCTION

The following ninety cases, which I wish to report, were induced for specific reasons, which will later be tabulated. These cases were personally supervised, and every care was taken to avoid the complications which the above authors, in their series of experimental cases, have warned against, namely, no engagement of the presenting part, pelvic dystocia, and an elongated, firm cervix.

The routine of induction was as follows:

3:00 a.m.—Castor oil, one ounce.

4:00 a.m.—Quinin, grains 10.

5:00 a.m.—Copious hot SS enema—approximately 115 degrees Fahrenheit.

6:00 a.m.—Copious hot SS enema—approximately 115 degrees Fahrenheit.

10:00 a.m.—Rupture of membranes.

2:00 p.m.—Nasal pituitrin every fifteen minutes, if necessary, or earlier if indicated.

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Several patients went into labor spontaneously with the above medication before rupture of the membranes, but these are not reported. The uterus was gently massaged routinely by an attendant at frequent intervals, following the rupture of the membranes; and, if labor did not set in before the expiration of four hours, nasal pituitrin, after the method of Hofbauer,<sup>5</sup> was used. No difficulty was encountered in rupturing the membranes. Anesthesia was not found necessary; no case, however, was used whose presenting part was engaged, or whose cervical canal was more than approximately one centimeter in length and did not easily admit the examining finger, even though Slemmons<sup>8</sup> found that the length of the cervical canal was irrelevant to a successful result. The above method was first used on only toxic cases in which there was a bona fide indication for inducing labor. Later, we used it successfully on selected patients who lived a considerable distance from the hospital, and in multiparas in whom there was history of a previous short labor. Of the ninety cases there were thirty-three primiparas and fifty-seven multiparas.

#### INDICATIONS

##### *Primiparas* (thirty-three cases)

- 15 Hypertension and albuminuria (one-twin pregnancy)
- 1 Secondary anemia of pregnancy
- 4 Pyelocystitis
- 1 Starvation acidosis from vomiting (in hospital one week)
- 1 Marginal placenta previa
- 1 Uterine fibroid
- 10 Normal

##### *Multiparas* (fifty-seven cases)

- 11 Hypertension and albuminuria
- 1 Osteo-arthritis
- 2 Pyelocystitis
- 43 Normal cases (one-twin pregnancy)

#### RESULTS

In seventy-nine cases, or 87.6 per cent, labor was spontaneous within four hours after rupture of the membranes. In eleven cases, nasal pituitrin was used after the four-hour period, with one failure. One patient of the series failed to go into labor: she was an Italian woman at the age of thirty-two, multipara, with a previous history of hypertension and albuminuria, spontaneous labor four weeks premature, with delivery of a four-pound baby. The patient was first seen the evening previous to attempting induction; an estimated pregnancy at term, blood pressure 160/105, albumin 1.5 grams per liter, the head was engaged. She was given routine treatment, except that nasal pituitrin was used immediately after rupturing the membranes—a total of six applications at fifteen-minute intervals being used; when the uterus remained flacid. Six hours after rupturing the membranes, a No. 5 Voorhees bag was inserted, and after three and one-half hours the patient was delivered spontaneously of a normal seven-pound one ounce baby.

A second multipara at the age of thirty-six at term, who was induced because of severe discomfort from chronic osteo-arthritis of the lumbosacral region, went into labor after a latent period of three and one-half hours, was bagged because of poor uterine contractions after six hours. She was delivered after 12.6 hours labor by mid-forceps of a normal eight-pound two-ounce baby.

#### LATENT PERIOD

There was considerable variation in the latent period. The estimated length of labor, the amount of amniotic fluid released, and the size of the infant, or the length and consistency of the cervix made no difference so far as I could ascertain. In the multiparas an average of .88 hour latent period was found—the longest being four and one-half hours. Eleven patients experienced good contractions immediately after rupture of the membranes.

In the primiparas, the average latent period was 2.08 hours—the longest five hours. Four patients went into labor immediately after rupture of the membranes. No appreciable difference was found in the latent period between the normal and the toxic cases in either primiparas or multiparas. Of the eleven cases who were given nasal pituitrin, two were primiparas with toxemia, one four weeks premature and the other two weeks premature, one primipara with marginal placenta previa, five multiparas with toxemia at term, and three normal multiparas at term.

#### DELIVERY

Labor was found to be considerably shortened. In the primiparas the average length was 7.67 hours; the longest being twenty-four hours in a persistent R. O. P., the patient having had a transverse arrest necessitating mid-forceps delivery. The shortest was 2.4 hours, a normal delivery. Twenty-eight cases, or 85 per cent, delivered in ten hours or less, only one patient being in labor over 12.5 hours. In the multiparas, the average length of labor was 3.37 hours; the longest being 12.6, the shortest .85 hours, 93 per cent delivered within six hours, 76 per cent in four hours or less.

#### SUMMARY OF DELIVERIES

A summary of the deliveries was as follows:

##### *Primiparas* (thirty-three cases)

- 1 Twin: first, L. O. A.; second, breech extraction
- 16 Normal, anterior positions
- 12 Low forceps
  - 8 palliative
  - 1 because of slow fetal heart
- 4 Mid-forceps
  - 3 posterior positions
  - 1 L. O. A.

##### *Multiparas* (fifty-seven cases)

- 1 Twin: first, frank breech; second, L. O. A.
- 52 Normal, anterior position
- 3 Mid-forceps; one L. O. P.; rotated normally
- 1 Mid-forceps, following bag

## MATERNAL MORTALITY AND MORBIDITY

*Maternal Mortality.*—None.

*Maternal Morbidity.*—Temperature determined by a reaction of 100 degrees Fahrenheit or over, lasting more than one day. In the primiparas, four cases, or 12 per cent, showed morbidity. One had a mild upper respiratory infection; two had recurrence of previous urinary infections; the fourth, a patient with a normal delivery, ran a temperature of 100.8 on the second day postpartum, and 100.2 on the third day; technically, only one case of the thirty-three showed morbidity, presumably due to uterine infection. In the multiparas, the morbidity was 10 per cent plus, or six of the fifty-seven cases. The multipara with osteo-arthritis, who was bagged, developed a phlebitis of the right leg, ran a characteristic septic fever; the multipara with hypertension and albuminuria, who was bagged, ran a temperature of 101 on the fourth day, and 100.8 on the fifth day, and then remained normal throughout the remainder of the period of hospitalization. Three cases had acute upper respiratory infections and one had a recurrence of a pyelocystitis.

## FETAL MORTALITY

Primipara and multipara: one baby succumbed, a mortality of 1.1 per cent. The mother, a normal multipara at the age of thirty-three, had a previous precipitate labor. The present pregnancy was at term. Labor set in immediately after rupture of the membranes, labor normal L. O. A. 2.3 hours' duration. A small amount of gas and oxygen was used during the second stage of labor. The infant, five pounds twelve and a half ounces at time of delivery, was normal in every respect, cried spontaneously, color was good. It began having cyanotic spells six hours postpartum, and died twenty-seven hours after delivery. Autopsy revealed pulmonary atelectasis and a congenital heart lesion.

## FETAL MORBIDITY

One normal, six-pound fifteen-ounce infant, who was delivered normally from a multiparous mother at term, after an easy 3.35 hours' labor, developed a bronchial pneumonia on the fifth day after delivery. However, the baby made an uneventful recovery, and was discharged with its mother on the fourteenth day postpartum. Dr. William Palmer Lucas, who saw this infant in consultation, felt that the condition noted was probably the result of an intra-uterine infection. The mother had no clinical manifestation of infection.

## COMMENT

Several of the cases are of unusual interest. One, a primipara, age twenty-nine, four weeks premature, had a previous history of scarlet fever and streptococcic sore throat. She first began showing signs of kidney strain at seven months. Supportive treatment was instituted at home with bed rest, diet, etc. At eight calendar months, the blood pressure had gradually increased from 140/90 to 160/100. The urinary albumin was 1.0 gram by Eschbach determination, her cervical

canal was found to be approximately one centimeter in length. After consultation the patient was transferred to the hospital and induction attempted. The latent period was 4.1 hours. One application of nasal pituitrin was used, followed by an easy labor of six hours. The infant of four pounds two and a half ounces presented no difficulties more than any premature, and was discharged from the hospital at the end of three and a half weeks, at six pounds.

Frequent blood pressure readings were taken during labor on the seven toxic cases, who received nasal pituitrin. In no case was there an increase over six to ten points in either the systolic or diastolic reading. Another primipara, two weeks premature, normal in every respect, except a marginal placenta previa, had been confined in the hospital with absolute bed rest for two weeks, because of a small amount of bleeding. In this case, nasal pituitrin was used immediately after rupturing the membranes. The latent period was 3.0 hours, and after eight hours of labor the fetal head had descended so that the baby could be delivered safely by a low mid-forceps. There was no excessive bleeding. However, I might add that surgery was prepared in case operative delivery should be deemed advisable.

The multiparous patient with osteo-arthritis, who was bagged after six hours of labor because of poor uterine contractions, gave a previous history of a high-forceps delivery on account of uterine atony. Morton's<sup>4</sup> failure was of this type. Hereafter, I shall hesitate in inducing labor in any patient with a history of an atonic uterus.

The infants presented no more difficulties than those of normal cases. One infant had a cephalohematoma, resulting from a transverse arrest, and mid-forceps delivery. Two infants, who were delivered by mid-forceps, were given intermuscular blood and frequent inhalations of 10 per cent carbon dioxide and oxygen, as is our practice in any abnormal delivery.

No procedure in the practice of obstetrics should ever be used for the obstetrician's convenience. Induction of labor is no exception. This method of inducing labor has its limitations and contraindications; however, it is one that, if used conservatively, I sincerely believe may be employed safely, not only in toxic cases, but also in the prospective mother who presents problems other than those of toxemia of pregnancy.

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## REFERENCES

1. Schultze, Margaret, *Am. J. Obst. and Gynec.*, 17:20, 1929.
2. Guttmacher and Douglas: *Am. J. Obst. and Gynec.*, 21:485, 1921.
3. Slemmons, J. Morris: *Am. J. Obst. and Gynec.*, 23:494, 1932.
4. Morton, Daniel G.: *Am. J. Obst. and Gynec.*, 26:323, 1933.
5. Hofbauer: *J. A. M. A.*, 89:24, 1927.

## DISCUSSION

J. MORRIS SLEMONS, M. D. (819 Pacific Mutual Building, Los Angeles).—The induction of labor, by means of medicinal agents supplemented with the rupture of the membranes, has proved to be a satisfactory method

in my own experience, which began in 1927. As Doctor Holmes points out, the cases in which the procedure will be employed should be carefully chosen, and their wise selection predicates a sound knowledge of obstetrics. Upon this fundamental requirement will chiefly depend the attainment of successful results.

Those who use the method frequently are anxious to eliminate everything that is unessential and so make the procedure as simple as possible. Their experience has already taught that the technique may be reduced to the following steps, namely, the initial administration of castor oil, the rupture of the membranes two to three hours later, and the subsequent application of pituitary extract to the nasal mucous membrane in accord with the response of the individual patient. There is no need for an enema, for massage of the uterus, for stripping the membranes, or for securing a free drainage of the amniotic fluid.

Failures are encountered occasionally, if the test of success is taken to be the delivery of the patient within twenty-four hours. The cause of failure, no doubt, is sometimes an inherent unresponsiveness on the part of the uterine muscle; but, more frequently, the fault lies with some nasal defect which modifies the action of the pituitary extract. Thus, its absorption may be prevented by the presence of scar tissue from a previous operation upon the nose; spurs may interfere with lodging the cotton pledget in a favorable location; a deflected septum may be a handicap, and other rarer types of nasal pathology will be encountered now and then. Emphasis is placed upon this practical detail because one should learn in advance whether or not the nasal passages are normal.

In my own series, two patients in whom the method failed at first responded to a repetition of the treatment on the following day. The later, successful results, I believe, are explained by the fact that the membranes had been ruptured twenty-four hours; consequently, the uterus was more sensitive to stimulation than it had been previously.

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CLARENCE W. PAGE, M. D. (2490 Channing Way, Berkeley).—During the past year and a half, in cases known to me, labor has been induced forty-two times, an incidence of 21 per cent. In two instances, labor was induced in the second trimester of pregnancy. In the first case, the toxemia had apparently been brought under control, but there was definite evidence of fetal death. The patient was bagged after failure to induce with castor oil, quinin, and pituitrin. The other was also a toxic case of the nephritic type, in which the patient was not improving under treatment. Here also a Voorhees bag was used.

All of the other cases were at term or beyond the expected date. Had I felt that there was much risk in induction, many of them could have been eliminated, as a good many were done at the patient's request.

Castor oil, quinin, and pituitrin failed to induce labor in twelve cases. Six of these succeeded after rupture of the membranes. The other six did not present sufficient indication for further procedures, and were permitted to await the spontaneous onset of labor.

The cases were about equally divided between primiparas and multiparas: twenty-three of the former, and nineteen of the latter.

The two babies born before viability were lost: one was dead before induction, and the other survived but a few minutes. Otherwise, all of the babies were discharged with the mothers without evidence of any injury. There was no maternal mortality, and no evident increase in morbidity. Neither was there any prolongation of the first stage of labor, as it averaged about eight hours.

The following shows results in more detail:

1. Castor oil only: Three patients, average first stage, 11 hours.

2. Castor oil, quinin, and pituitrin: Twenty-eight patients, average first stage, 7.5 hours.

3. Castor oil, quinin, pituitrin, and rupture membranes: Six patients, average first stage, 10 hours.

4. Rupture of membranes only: Three patients, average first stage, 8 hours.

5. Bag: Two patients.

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DANIEL G. MORTON, M. D. (University of California Medical School, San Francisco).—Doctor Holmes' report of ninety cases, in which labor was induced by means of rupturing the membranes, may be added to the ever-increasing evidence that this method of induction is not only highly effective, but innocuous for both mother and child. His fetal mortality of 1.1 per cent is proof of its harmlessness. Such a low mortality is hardly more than one would expect in a comparable number of cases in which the onset of labor was spontaneous. Quite properly, he has emphasized that there are certain contraindications—such as non-engagement of the presenting part, pelvic disproportion, a long rigid cervix, and a history of uterine atony in former labors. With these contraindications I am in hearty accord. I suspect that if the method be used in cases which are much more than a month short of term, the fetal mortality will rise perceptibly. Such a rise would be due to two causes, to wit: First, the frailty of prematures in general, and secondly, the added stress on the poorly developed fetal head, inevitable in a fairly rapid labor taking place in the absence of the cushioning effect of the intact amniotic sac. This was most assuredly the experience of the ancients who used this method of induction to bring on labor prematurely in cases with contracted pelvis. They gave up the method because of its high fetal mortality, failing to appreciate that prematurity *per se* had much to do with it. With a modern thoroughgoing appreciation of contraindications, fetal mortality can be kept at a satisfactorily low figure.

The principal danger in a method of this kind, which is highly effective and relatively harmless, lies in the possibility of its indiscriminate use. This should be avoided. Labor should be induced only upon definite indication.

## LOBAR PNEUMONIA\*

### AN ATTEMPT TO EVALUATE VARIOUS METHODS OF TREATMENT

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DISCUSSION by Leo P. Guenther, M. D., Los Angeles; William J. Kerr, M. D., San Francisco; Ewin L. Bruck, M. D., San Francisco.

AN attempt has been made to evaluate various methods used in the treatment of lobar pneumonia over a four-year period, ending December 31, 1933. The records are from the medical services of the Fresno General Hospital and from private practice. Inasmuch as it was possible to type the relatively small group of private cases only, all reference to typing is ignored. There is no intention to discredit or minimize the value of serum therapy in Types I, II or VII, but in our county institution the methods employed must needs be inexpensive.

### MORTALITY RATES IN THE DIFFERENT GROUPS

Our mortality rate in the ninety-one control cases is about that generally given in the medical

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